1: Course Number and Name

a. **MENG 4091**: Robotic Drone Survey Research, Spring 2022
b. Section 010, MWF, 11:00 am-11:50 am

2: Credits and Contact Hours

a. **Credits**: 3
b. **Contact Hours**: 3 hours/week

3: Instructor Information

a. **Course Coordinator**: Armita Hamidi
b. **Instructors**: Armita Hamidi
Email: armita.hamidi@angelo.edu.
Phone: 325-486-5518
Office: VIN 273.
c. **Office hours**: Mondays & Wednesdays 3:30 pm -5 pm (face to face in VIN 273 or virtual through Blackboard Collaborate).

4: Required Course Materials

No textbook is required. Required materials will be provided by the instructor.

5: Technology Requirements

To successfully complete this course, you need to regularly check emails and may need a computer with a webcam for online meetings as needed. Software that are needed for the project will be requested to ASU IT service for installation.

6: Specific Course Information

a. **Catalog Description:** Independent study or individual research problems in Mechanical Engineering. May be repeated for a total of 12 credits.
b. **Prerequisites**: Mechanical Engineering Majors only with Junior or Senior standing. Departmental permission.

7: Specific Goals for the Course

a. Course Learning Outcomes:

1. Apply the knowledge and skills acquired in the undergraduate curriculum to a research project.
2. Be able to identify the problem and specify project requirements applicable to realistic constraints.
3. Be able to systematically develop a novel design/solution from the problem statement to a detailed, completion of the project meeting all of the specifications.

b. Course Learning Outcome Mapping to ABET Criterion 3 Student Outcomes:

Table 1: Course Learning Outcomes mapped to ABET Student Outcomes

ABET Student Outcomes	1	2	3
1. Solve Problems	X	X	
2. Design	X	X	X

ABET Student Outcomes	1	2	3
3. Communication			
4. Ethics & Professionalism			
5. Teamwork			
6. Experimentation			X
7. Acquire New Knowledge			

8: Topics Covered

1. Literature review
2. Experimental setup for research
3. Data analysis
4. Prepare professional report
5. Poster preparation

9: Course Delivery and Communications

9.1: Delivery Method(s)

This course has one significant component: three-hour review/feedback sessions per week. On-time

attendance of sessions is REQUIRED. This is a blended course with a combination of face-to-face and online as needed. For each session, you are expected to have completed your assigned milestone and come prepared to present your weekly progress towards the completion of the project. You will be given feedback on your progress and next week's plan.

A student's responsibility includes but is not limited to 1) plan your individual contribution, 2) clearly set your own goals and share with team, 3) monitor and assess your own progress, and evaluate/compare with your peers, 4) work alone, as a team, collaborate, and support your team members as appropriate. 5) communicate with the instructor scheduling weekly meeting, the performance will be assessed based on your individual contribution and overall team achievements. The value of the course to you will be highly dependent upon your preparation for class. We will be using both Blackboard.[1], and email to communicate during this course.

9.2: Communications

Faculty will respond to email within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the Team viewer, Zoom, Collaborate, Skype, etc.

10: Professionalism

Professional engineering standards apply in this class. You are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. You are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) demonstrate sensitivity and appreciation for diverse cultures,

backgrounds, and life experiences; (5) offer and accept constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

11: Graded Material

The weighting system shown in Table 2 will be used in determining the final grade for the course

Table 2: Grade Weighting

Item	Percent
Attendance, Participation & Professionalism	20%
Weekly progress	20%
Presentation	20%
Final project report	20%
Prototype	20%
Total	100%

The instructor will determine letter grades for the course using his professional judgment, and the following standards as described in the University Catalog:

A = excellent work B = good work C = average work D = poor work F = failing work

12: Classroom and University Policies and Student Support

12.1: General Policies

All students are required to follow the policies and procedures presented in the Angelo State University Student Handbook[2] and Angelo State University Catalog[3].

12.2: Student Disability Services

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website[4]. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford
Director of Student Disability Services
Office of Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

12.3: Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: Incident Reporting Form[5]

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit: www.angelo.edu/title-ix[6].

12.4: Observance of Religious Holy Day

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day[7] for more information.

12.5: Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures[8] for more information.

12.6: Information About COVID-19

Please refer to ASU's COVID-19 (Coronavirus) Updates[9] web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

12.7: Student Conduct Policies

12.7.1: Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's Statement of Academic Integrity[10] (Page 97).

12.7.2: Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity policy[11] in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin or SafeAssign. Resources to help you understand this policy better are available at the ASU Writing Center[12].

12.7.3: Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

13: Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

14: Course Outline

The course outline is presented in the table next page. Detailed reading and homework assignments along with updates to this schedule will be provided via Bb. The following schedule may be modified as the semester progresses.

Table 3: Course Lesson Outline

Activity/Task	Time to Complete
Define project goal	3 days

Literature Review	3 weeks (or whenever required by the faculty mentor during each stage of the project)
Determining rules and regulations, and obtaininging required licenses for flying drones	1 week
Find testing locations and obtain permission if needed	1 week
Work with faculty mentor to order drone	1 week
Check specifications and learn to work with the initial drone by conducting simple flight tests	1 week
Review and communicate data with faculty mentor	2 days
Specify required electronics, search and compare available options	2-3 weeks
Review the results with the faculty mentor and finalize the initial equipment list	1 week
Check the specifications of the purchased electronics equipment by testing them and discussing the results with the faculty mentor	2-3 weeks
Integrate the sensors and purchased electrical components into the drone design if needed	3 weeks
Conduct tests on the drone with initial equipment integrated into it and collect data	1 week
Analyze the data gathered by the drone	5 days
Review and communicate data with faculty member	3 days
Make a plan for required optimization on the drone system	4 days

Finalize the equipment needed to be purchased for the optimization with the faculty advisor	2 days
Finalize the design optimizations the drone is required	4 days
Purchase for the required equipment and modify the drone design for integrating new equipment	4 days
Integrate new components, systems, or design modifications	7 days
Conduct tests on the drone with updated design	3 days
Review and communicate data with faculty member	3 days
Combine and compare data from all tests	1-2 week
Write Final Report and create presentation	1 weeks
Submit Final Paper to ASU's journal	1 day

15: End Notes

[1] https://blackboard.angelo.edu/
[2] http://www.angelo.edu/student-handbook/
[3] http://www.angelo.edu/catalogs/
[4] http://www.angelo.edu/services/disability-services/
[5] https://www.angelo.edu/incident-form
[6] http://www.angelo.edu/title-ix
[7] http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
[8] https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
[9] https://www.angelo.edu/covid-19/
[10] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[11] http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
[12] http://www.angelo.edu/dept/writing_center/academic_honesty.php